

Re. box V.

10/590948
IAPS Rec'd PCT/PTO 28 AUG 2006

1 Reference is made to the following documents:

D1 : 01/33061 A (Siemens Aktiengesellschaft; CHEMISKY, ERIC; KAPPEL, ANDREAS; GOTTLIEB,) 10 May 2001 (2001-05-10)
D2 : US 6 031 707 A (MEYER ET AL) 29 February 2000 (2000-02-29)

2 INDEPENDENT CLAIM 1

2.1 The present application does not fulfill the requirements of Article 33(1) PCT because the object of claim 1 is not novel in the sense of Article 33(2) PCT. Document D1 discloses (the references in brackets relate to this document):

Method for controlling an actuator, especially a piezoelectric actuator, featuring the following steps:

- The actuator is charged or discharged in at least three stages (see current ID in Fig. 4) each with a predefined period, by a current (ID),
- during the first period (T9) the maximum amplitude of the current (I) is increased from a predefined minimum to a predefined maximum (see the first 9 current pulses of ID in Fig. 4),
- during the second period the maximum amplitude of the current is kept approximately constant, (see current pulse 10 and 11 of ID in Fig.4) and
- during the third period the maximum amplitude of the current is reduced from a further predefined maximum to a further predefined minimum (see the last 9 current pulses of ID in Fig. 4).

2.2 Since the formulation "especially of a piezoelectric actuator" does not have any restrictive effect, documents from the area of electromagnetic actuators can also be detrimental to novelty. One example of this is document D2, see Fig. 2.

3 INDEPENDENT CLAIM 11

3.1 The present application does not meet the requirements of article 33(1) PCT, since the object of the claim 11 is not novel in the sense of article 33(2) PCT, since both in D1 and also in D2 a device for controlling an actuator is disclosed with the features listed in claim 11.

4 CLARITY OF INDEPENDENT CLAIMS I AND II

4.1 The formulation "maximum amplitude" is not clear within the context of claim I without the necessary further information about current profile and therefore does not fulfill the requirements of Article 6 PCT. It does not clearly emerge from the claim that the current is clocked and the amplitude of the clocked current follows a control signal in this case.

4.2 In claim II a lack of clarity emerges about the actual function of the final stage, namely the generation of a clocked current of which the amplitude follows the control voltage at the control input. This also leads to claims I and II not matching each other sufficiently well.

5 INDEPENDENT CLAIMS 5-10, 12

5.1 Claims 5-10, 12 do not contain any features, which in combination with the features of any claim to which they relate, fulfill the requirements of the PCT in relation to novelty, since these are already disclosed in D1.

5.2 Claim 12 belongs to the category of device claims and therefore refer not to claim I but to claim II.

6 DEPENDENT CLAIMS 2-4

6.1 It is known to the person skilled in the art that the level of an amount of charge fed in is produced from the integral of the inflowing current. It is part of usual procedures to set the desired value for a predefined amount of charge with the aid of the parameters current amplitude and charge duration. Storing these values in an engine map is also standard practice. Claims 2 to 4 thus do not meet the requirements of the PCT as regards inventive step.